ACM/828

Toxoplasmosis

National Public Health Service for Wales
Gwasanaeth Iechyd Cyhoeddus Cenedlaethol Cymru

Background

- **Protozoan Parasite**
- **Zoonosis**
- **Persistent infection**
- **Worldwide Distribution**
- **Main Routes of Infection** – Environment & food borne

Toxoplasma in NL

"Priority setting of foodborne pathogens"
Kemmeren et al. RIVM report 330080001/2006

- Highest disease burden among 7 foodborne pathogens (incl. campylobacter, salmonella, listeria, E.coli 0157)
- Findings based upon ALL routes of infection (specific contribution of food will be evaluated later)
- Results are "very uncertain"
- Conclusions based upon estimates of infection rates and extrapolation of study in South Holland *"However, it is not known whether the incidence…is representative for the whole country."*
- *"…better estimates (of congenital and acquired toxoplasmosis) are very important…"*

Toxoplasma in USA

"Food-Related Illness & Death in the United States"
Mead et al. Emerg Infect Dis 1999;5:607-625

- Estimated 50% due to food (evidence not shown)
  "Although the proportion associated with eating contaminated food varies by geographic region, we assume an overall average of 50%. Recent unpublished data from Europe suggest that 60% of acute infections are from contaminated food."
- 225,000/38,000,000 (0.6%) cases of foodborne illness due to Toxoplasma
- 375/1809 (20.7%) foodborne deaths due to Toxoplasma
- 40% Seropositive in persons >60yr (cf 55% in UK)
- Incidence approximately 0.6% p.a. (cf 0.9% in UK)

Sources of toxoplasma infection in pregnant women:

European multicentre case-control study

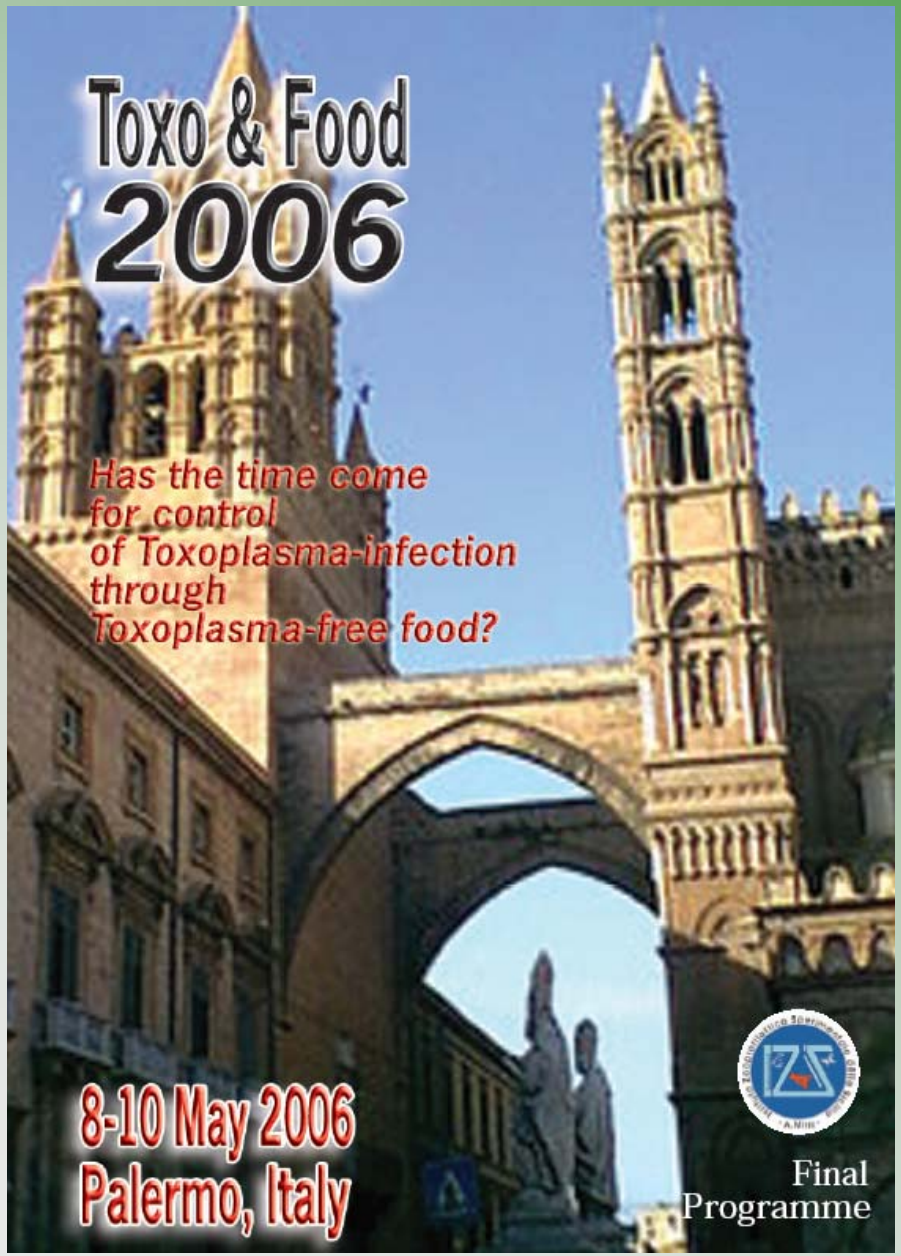
BMJ 2000;321:142-147

Objective: To determine the odds ratio and population attributable fraction associated with food and environmental risk factors for acute toxoplasmosis in pregnancy.

Setting: Six large European cities. Naples, Lausanne, Copenhagen, Oslo, Brussels, and Milan

Results: Risk factors most strongly predictive of acute infection in pregnant women were eating undercooked lamb, beef, or game, contact with soil, and travel outside Europe and the United States and Canada. **Contact with cats was not a risk factor.** Between 30% and 63% of infections in different centres were attributed to consumption of undercooked or cured meat products.

Conclusions: Inadequately cooked or cured meat is the main risk factor for infection with toxoplasma in all centres.

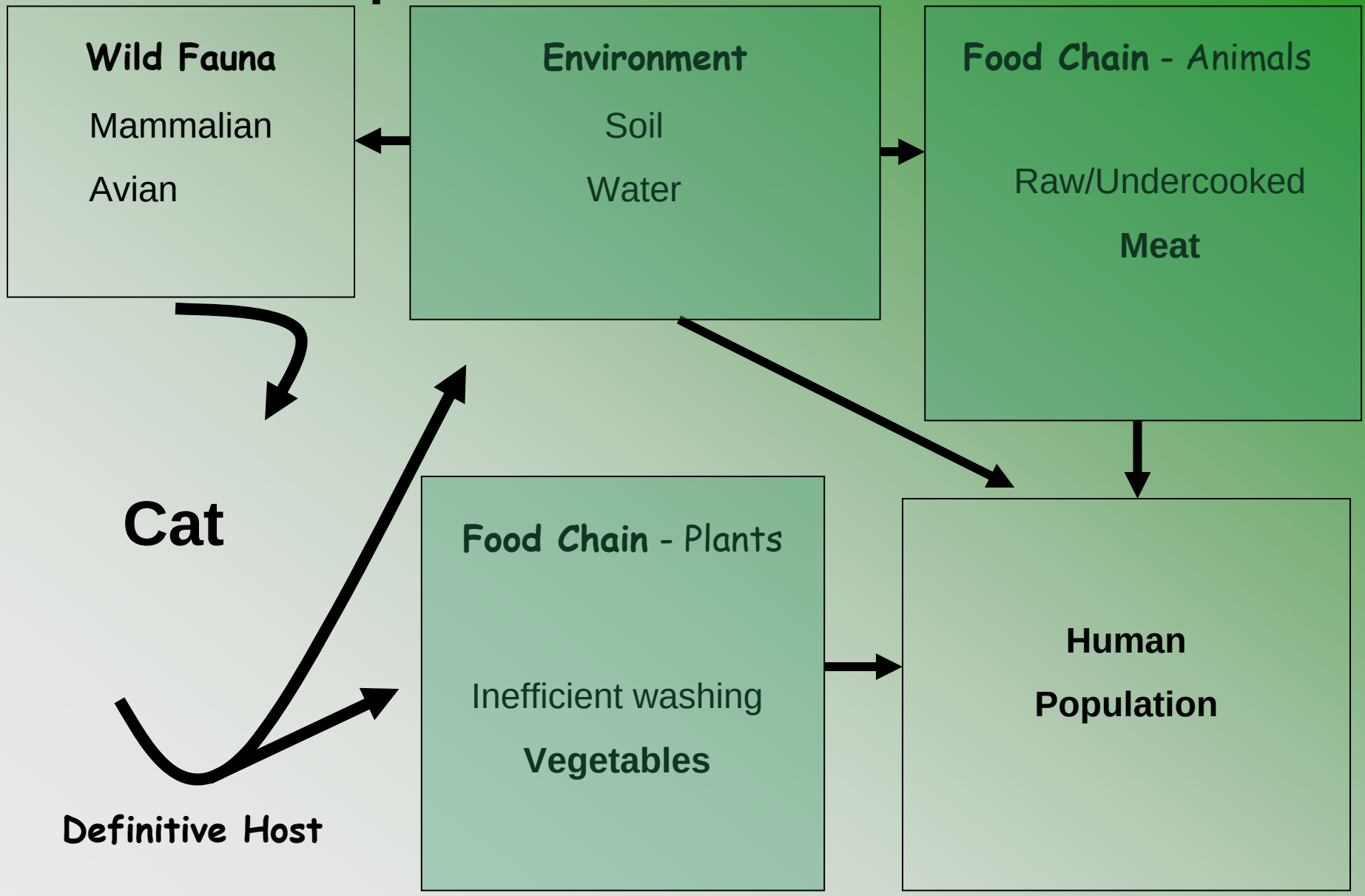


The European Debate on Toxoplasma in Food

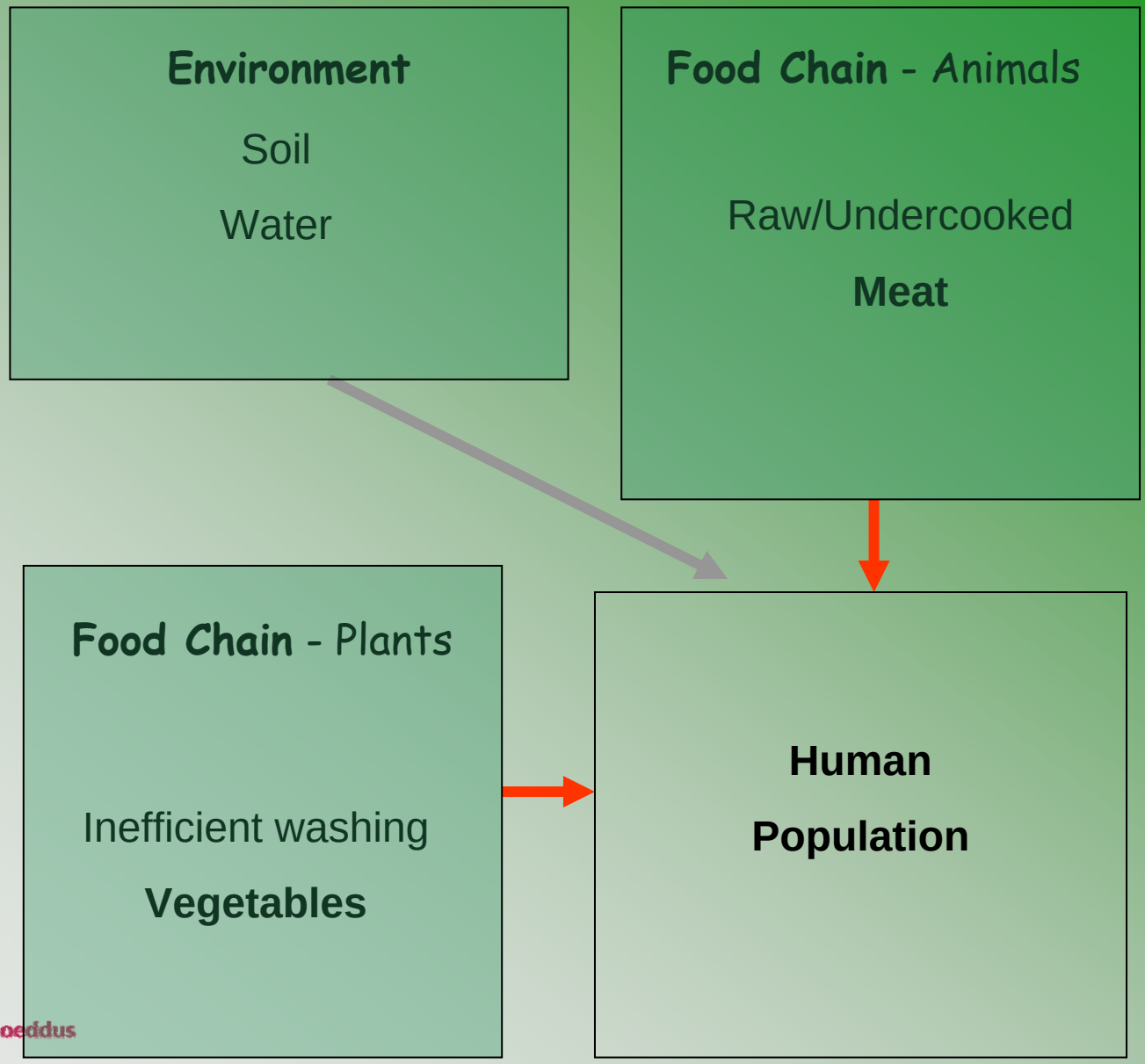
Recent trends in consumer's habits indicate a shift towards consumption of "animal friendly" or "organic" pigs, …… which will lead to an increased risk of Toxoplasma gondii in products from such animals.

We therefore believe that the time has come to discuss whether future control of Toxoplasma gondii infections in humans should rely on providing the consumer with Toxoplasma-free meat and meat products, just as we expect Trichinella, Salmonella and Listeria free food.

Toxoplasma Transmission



Toxoplasma Transmission



National Public Health Service for Wales
Gwasanaeth Iechyd Cyhoeddus Cenedlaethol Cymru

Health Impact

Foodborne vs Environmentally-acquired

- Risk Factors for acquiring Toxoplasma Infection
  - Questionnaire-based Studies
  - Studies of Foodchain (Prevalence, Viability)
  - Toxoplasma in the environment
- Incidence of Infection/Clinical Presentation
  - Enhanced Surveillance
- Outcome/Long-term Sequelae
  - Clinical follow-up/Case-control Studies

Burden of Disease in UK

Clinical Spectrum

National Public Health
Service for Wales
Gwasanaeth Iechyd Cyhoeddus
Cenedlaethol Cymru

Key Clinical groups

- Immunocompetent
- Immunosuppressed
- Immunodeficient
- Pregnancy/Congenital Toxoplasmosis

Incidence of Disease
(England & Wales)

- Not notifiable in England & Wales
- Likely Underreported – esp. Immunocompetent

117 Cases p.a. Reported by NHS Labs

667 Cases p.a. Identified by TRU

- **185/667** HIV or 'High Risk of HIV'
- **11** cases p.a. CT (NPHS/ICH)

National Public Health Service for Wales
Gwasanaeth Iechyd Cyhoeddus Cenedlaethol Cymru

1. Change in Incidence of Toxoplasma Infection with Time

Department for Work and Pensions

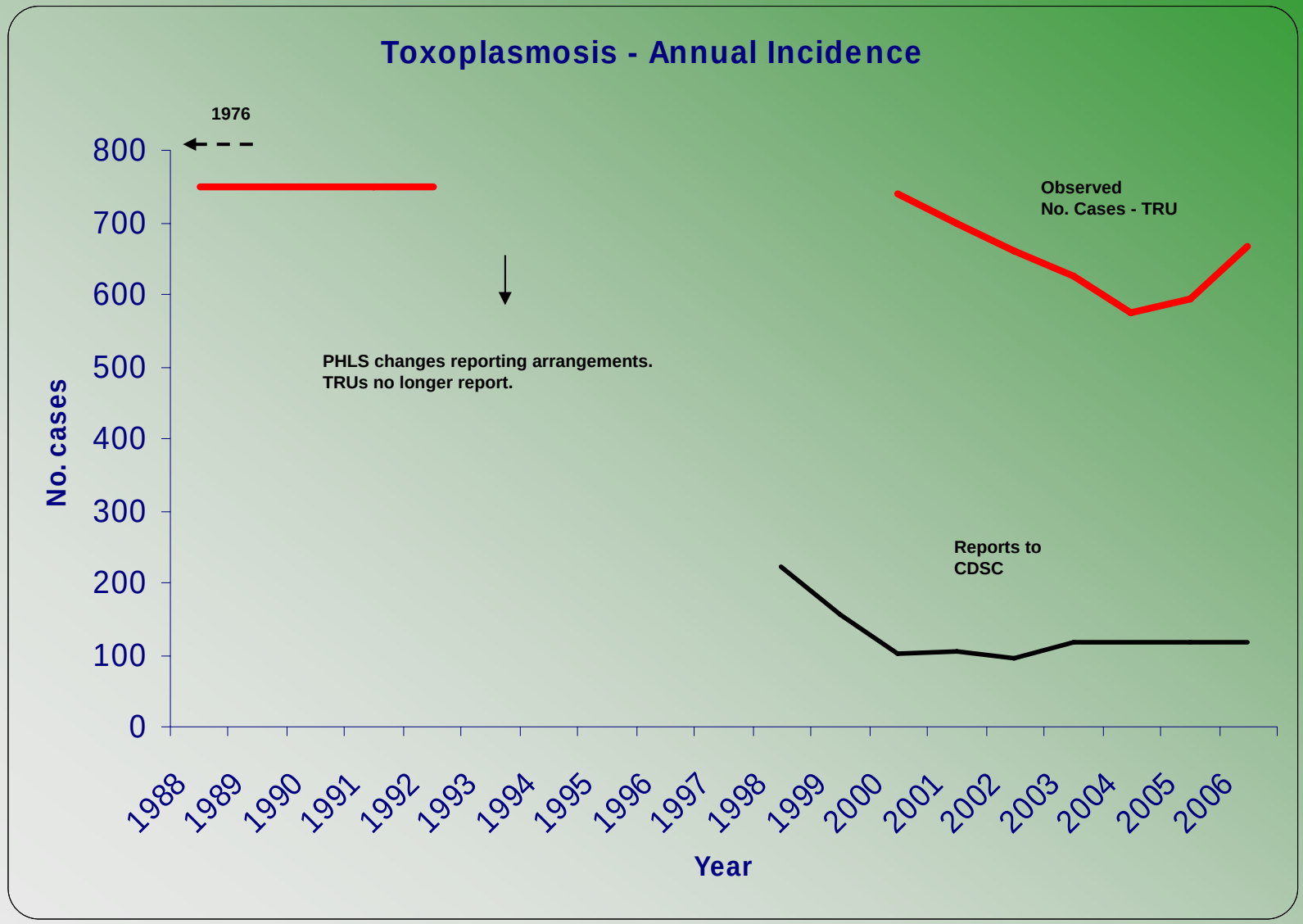
Industrial Injuries Advisory Council - Review of biological agents.
November 2003

"In the UK general population, there were 128 laboratory-confirmed human cases in 2000, 181 in 1999 and 222 in 1998, according to the PHLS.

***Between 1989 and 2000, the incidence of toxoplasmosis in the UK declined for unknown reasons**."*

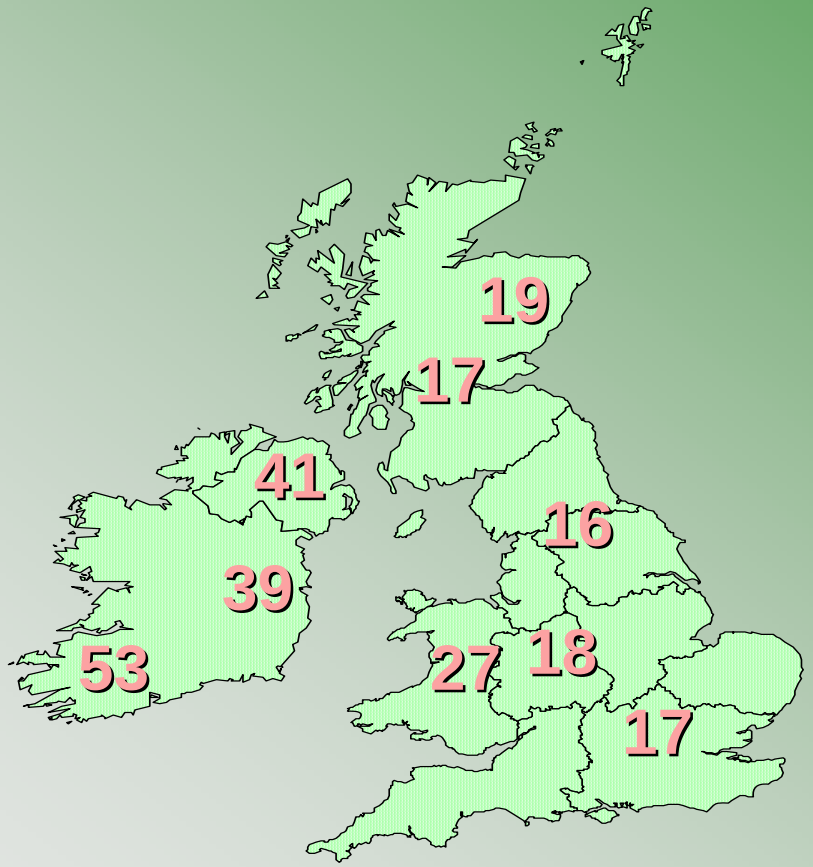
National Public Health Service for Wales
Gwasanaeth Iechyd Cyhoeddus Cenedlaethol Cymru

Is Toxoplasma infection in the UK really declining?



2. Geographical Distribution in UK (1992)

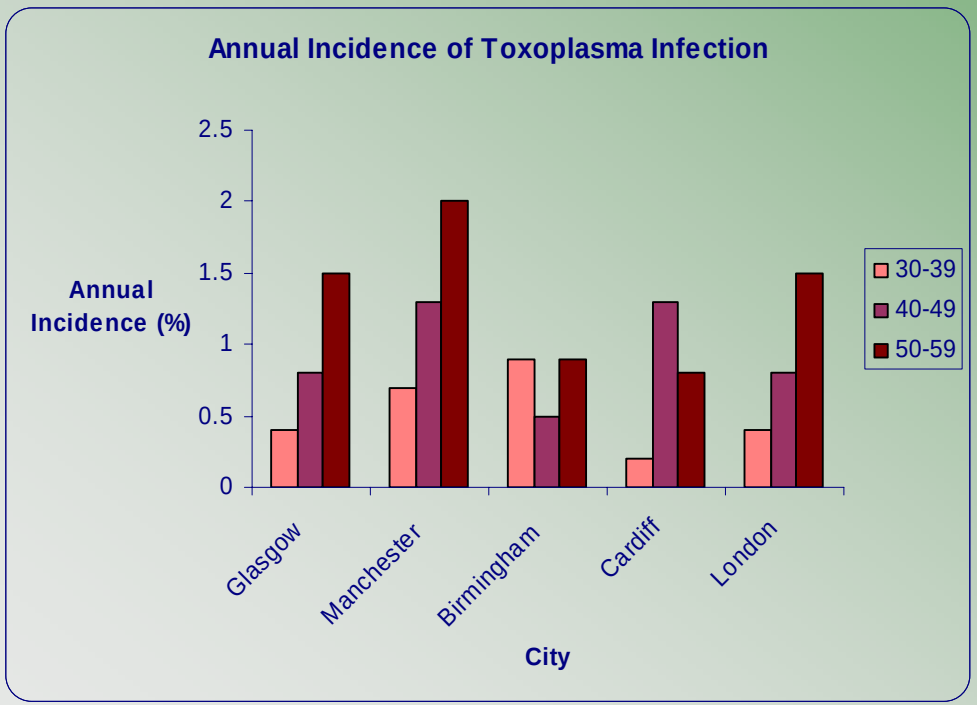
Mean seroprevalence in 20-60yr blood donor group

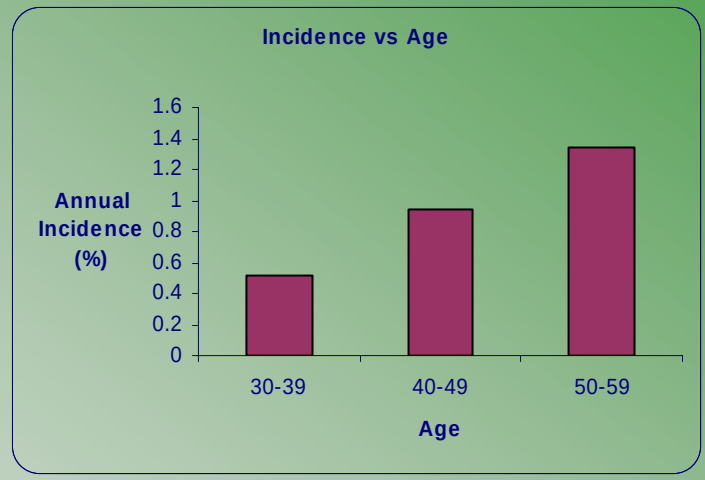


~ 5-10 million of UK population infected

National Public Health Service for Wales
Gwasanaeth Iechyd Cyhoeddus Cenedlaethol Cymru

Incidence of Toxoplasma Infection in the UK





National Public Health Service for Wales
Gwasanaeth Iechyd Cyhoeddus Cenedlaethol Cymru

Toxoplasmosis Infection Rates in Wild Animals

Moles	6%
Hedgehogs	27%
Rats	5%
Crows	30%
Pigeons	10%
Mallards	20%
Gulls	25%

National Public Health Service for Wales
Gwasanaeth Iechyd Cyhoeddus Cenedlaethol Cymru

Toxoplasmosis Infection Rates in Foodchain/Domestic Animals

Cattle	0 - 20%
Sheep	16 - 64%
Pigs	8 - 50%
Rabbits	5 - 10%
Chickens	1 - 10%
Fish	0%
Dogs	16 - 32%
Cats	16 - 77%

National Public Health Service for Wales
Gwasanaeth Iechyd Cyhoeddus Cenedlaethol Cymru

Rare meat poses risk to unborn children

By David Derbyshire, Medical Correspondent
(Filed: 14/07/2000)

PREGNANT women who eat rare or cured meat may be putting their unborn children at risk of brain damage, according to new research.

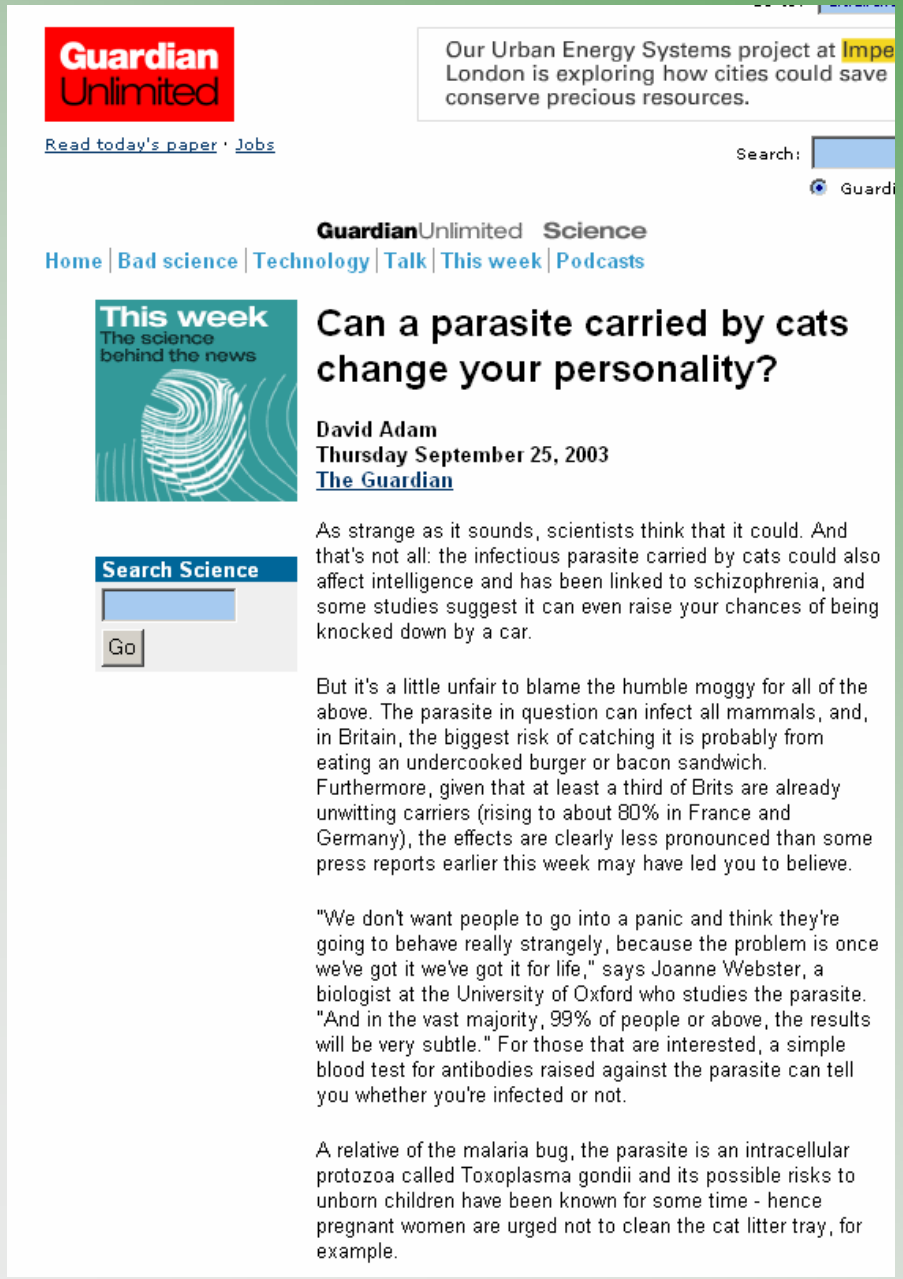
A European-wide study has found that undercooked meat is the single biggest risk factor in pregnancy for toxoplasmosis, a disease carried by parasites that can cause damage to the brain and eyes of foetuses.

The findings, published today in the British Medical Journal, may lead to stronger warnings for pregnant women to avoid cured meats and rare steaks, along with other banned foods such as soft cheeses, raw eggs, peanuts and seafood.

In Europe, one in 1,000 newborn babies is infected with toxoplasmosis. Of those, up to two per cent die or develop learning difficulties, while 27 per cent have eyesight problems.

The disease is spread through the parasite Toxoplasma gondii, which is found in raw meats, farm animals, pet litter and soil. The popularity of organic meat, and the switch from beef to pork and poultry, which are more likely to be infected, has raised fears that the disease is on the increase.

“Rare meat poses risk to unborn children”



But it's a little unfair to blame the humble moggy for all of the above. The parasite in question can infect all mammals, and, **in Britain, the biggest risk of catching it is probably from eating an undercooked burger or bacon sandwich.**

BBC CATEGORIES TV RADIO COMMUNICATE WHERE I LIVE INDEX SEARCH Go

BBC NEWS

You are in: Health

News Front Page
World
UK
England
N Ireland
Scotland
Wales
Politics
Business
Entertainment
Science/Nature
Technology
Health
Medical notes
Education

Talking Point

Country Profiles
In Depth

Programmes

BBC SPORT
BBC WEATHER
CBBC news

SERVICES
Daily E-mail
News Ticker
Mobile/PDAs

Text Only
Feedback
Help

EDITIONS
Change to World

Saturday, 10 August, 2002, 23:03 GMT 00:03 UK

Dirt infection link to car crashes

Drivers could be at increased risk

Scientists warn that the parasitical disease toxoplasmosis could increase the risk of having a road accident.

People were found to be two to three times more likely to be involved in a crash than unaffected individuals.

The Czech team which carried out the research said cysts which form in the nerves and muscle tissue could reduce people's ability to concentrate.

But a UK expert cast doubt on the research, saying the findings should be viewed with caution.

The parasite *Toxoplasmosis gondii* infects between 30 to 60% of people across the world.

These findings should be viewed with caution

Dr Ruth Gilbert, Toxoplasmosis expert

Very few have symptoms because the immune system usually prevents the parasite

See also:

- 09 Jan 01 | Health
  Pregnant women urged: Avoid sheep
- 23 Apr 01 | Health
  MS 'can increase road accident risk'
- 18 Mar 99 | Health
  Sleep disorder causes car crashes

Internet links:

- European Multicentre Study on Congenital Toxoplasmosis
- BMC Infectious Diseases
- Toxoplasmosis information

The BBC is not responsible for the content of external internet sites

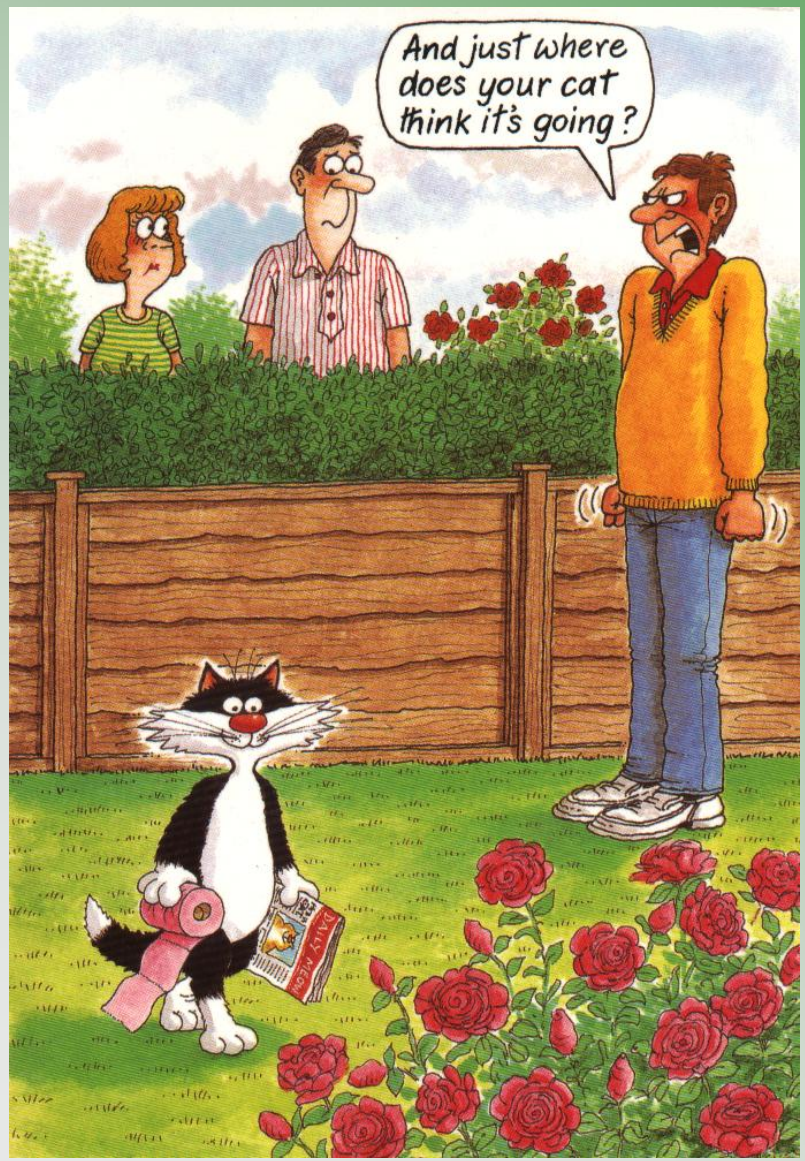
Top Health stories now:

- Climbdown on care home rules
- Jab to counter rise in deadly disease
- NHS watchdog to monitor operations
- ECT challenge halted
- Skill-sharing cuts doctors' workload
- Heart risk link to big families
- Ministers suffer second bed block defeat
- Ebola outbreak confirmed in Congo

Links to more Health stories are at the foot of the page.

"People were found to be two to three times more likely to be involved in a crash than unaffected individuals."

"But a UK expert cast doubt on the research saying the findings should be viewed with caution."



Risk Assessment

Time for UK review?